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CBO STUDY ON THE SUPERCONDUCTING SUPER COLLIDER

The United States is currently considering building the Superconducting Super Collider (SSC) to support future research in high-energy physics. The SSC is the largest and most powerful particle accelerator yet proposed worldwide and is intended to achieve major advances in the study of the basic nature of matter. A special study by the Congressional Budget Office (CBO), *Risks and Benefits of Building the Superconducting Super Collider*, prepared at the request of the Senate Budget Committee, finds that the SSC could cost more than the \$4.4 billion (in fiscal year 1988 dollars) estimated by the Department of Energy (DOE). CBO's technical and historical analyses of the DOE estimates suggest that costs might rise by as little as 4 percent (well within DOE's own margin of error) or by as much as 46 percent (the average real cost increase for particle accelerators built by DOE during the 1980s).

In 1988, high-energy physics funding accounted for 6.6 percent of federal spending on basic science research. Construction of the SSC would double the share of research spending going to high-energy physics for about six years, assuming no real increase in funding for other basic science. In contrast, the 2,200 high-energy physicists and 600 Ph.D. candidates in high-energy physics account for just 3 percent and 0.6 percent, respectively, of all active basic research scientists and Ph.D. students in science.

Alternatives to the SSC include joining the European Organization for Nuclear Research (CERN) in the planning and construction of their proposed new accelerator (the Large Hadron Collider) or building an advanced electron-positron linear collider. While these alternatives are expected to answer the "next-step" questions in high-energy physics and could save the Congress as much as \$4 billion, both are technically riskier and less capable scientifically than the SSC. The next Congress will be asked to decide whether the added scientific value and lower technical risk are worth the extra cost of about \$3 billion to \$4 billion to U.S. taxpayers. Another option available to the Congress is to defer the decision while DOE improves the technology for the SSC's superconducting magnets and continues research on the alternative particle accelerators.

The Office of Intergovernmental Relations is CBO's Congressional liaison office and can be reached at 226-2600. For additional copies of the report, please call the Publications Office at 226-2809. Questions regarding the analysis should be directed to the author, Philip Webre, of CBO's Natural Resources and Commerce Division at (202) 226-2940.



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